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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,128	08/24/2001	J. Douglas Child	TI-32537	2969

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EXAMINER	
BELL, MELTIN	

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/939,128	CHILD ET AL.	
	Examiner	Art Unit	
	Meltin Bell	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is responsive to application **09/939,128** filed 08/24/2001 as well as the Amendment filed 9/20/04. Claims 1-12 filed by the applicant have been entered and examined. An action on the merits of claims 1-12 appears below.

Claim Rejections - 35 USC § 103

Applicant's arguments have been fully considered, but are not persuasive. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Office presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Office to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1-12 are rejected under 35 U.S.C. 103(a) as being obvious over *Nakayama et al* USPN 5,732,001 "Calculator with stepwise display of linear equations" (March 24, 1998) in view of *Reboh et al* USPN 4,866,634 "Data-driven, functional expert system shell" (September 12, 1989).

Regarding claim 1:

Nakayama et al teaches,

- a screen capable of displaying mathematical expressions (Fig. 1, item 2)
- a key panel having keys operating the calculator and entering user responses (Fig. 1, items 3, 3a-k, 3m, 4, 5, 5a; Fig. 51)
- a processor for executing programming that provides a user interface to assist the user in learning to solve a mathematical symbolic calculation problem (Fig. 2, item 10)
- programming which provides a set of transformations for a mathematical object that the user can choose from and apply to the mathematical object to produce the next step in a solution to the problem (Abstract; Figs. 3, 8, 13, 17, 21, 41-50, 52; column 10, lines 5-12)

However, *Nakayama et al* doesn't explicitly teach expert programming while *Reboh et al* teaches,

- expert programming (Abstract; column 1, lines 12-15)

Motivation – The portions of the claimed device would have been a highly desirable feature in this art for providing useful conclusions in solving problems (*Reboh et al*, column 1, lines 26-28; column 2, lines 15-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Nakayama*

et al as taught by *Reboh et al* for the purpose of providing useful conclusions in solving problems.

Regarding claim 2:

The rejection of claim 2 is similar to that for claim 1 as recited above since the stated limitations of the claims are set forth in the references. Claim 2's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to allow transformations of the mathematical object that are valid mathematically, but do not lead to the solution of the problem (column 20, lines 53-67; Figs. 34, 38, 44-45, 49-50)

Regarding claim 3:

The rejection of claim 3 is similar to that for claim 2 as recited above since the stated limitations of the claims are set forth in the references. Claim 3's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to pause after the user selects the transformation before applying the transformation to the problem (column 4, lines 1-23)

Regarding claim 4-5:

The rejection of claims 4-5 is similar to that for claim 3 as recited above since the stated limitations of the claims are set forth in the references. Claim 4-5's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to clean-up the result of a previous transformation in response to the user pressing a key, where clean-up consists of

arithmetic and other basic simplification appropriate for the problem (Fig. 1, ON/C and DEL keys; Fig. 2, item 13c; Fig. 27, items 23i, 3i-k)

Regarding claim 6:

The rejection of claim 6 is similar to that for claims 4-5 as recited above since the stated limitations of the claims are set forth in the references. Claim 6's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to provide a set transformation tools for a mathematical sub-object that the user can choose from and apply to the mathematical sub-object in a selection box to product the next step in a solution to the problem (column 13, lines 62-67)

Regarding claim 7:

Nakayama et al teaches,

- a screen capable of displaying mathematical expressions (Fig. 1, item 2)
- a key panel having keys operating the calculator and entering user responses (Fig. 1, items 3, 3a-k, 3m, 4, 5, 5a; Fig. 51)
- a processor for executing programming that provides a user interface to assist the user in learning to solve a mathematical symbolic calculation problem (Fig. 2, item 10)
- programming which provides a set of transformations for a mathematical object that the user can choose from and apply to the mathematical object to produce the next step in a solution to the problem (Abstract; Figs. 3, 8, 13, 17, 21, 41-50, 52; column 10, lines 5-12)

However, *Nakayama et al* doesn't explicitly teach expert programming while *Reboh et al* teaches,

- expert programming (Abstract; column 1, lines 12-15)

Motivation – The portions of the claimed device would have been a highly desirable feature in this art for providing useful conclusions in solving problems (*Reboh et al*, column 1, lines 26-28; column 2, lines 15-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Nakayama et al* as taught by *Reboh et al* for the purpose of providing useful conclusions in solving problems.

Regarding claim 8:

The rejection of claim 8 is similar to that for claim 7 as recited above since the stated limitations of the claims are set forth in the references. Claim 8's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to allow transformations of the mathematical object that are valid mathematically, but do not lead to the solution of the problem (column 20, lines 53-67; Figs. 34, 38, 44-45, 49-50)

Regarding claim 9:

The rejection of claim 9 is similar to that for claim 8 as recited above since the stated limitations of the claims are set forth in the references. Claim 9's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to pause after the user selects the transformation before applying the transformation to the problem (column 4, lines 1-23; column 13, lines 62-67)

Regarding claim 10-11:

The rejection of claims 10-11 is similar to that for claim 9 as recited above since the stated limitations of the claims are set forth in the references. Claim 10-11's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to clean-up the result of a previous transformation in response to the user pressing a key, where clean-up consists of arithmetic and other basic simplification appropriate for the problem (Fig. 1, ON/C and DEL keys; Fig. 2, item 13c; Fig. 27, items 23i, 3i-k)

Regarding claim 12:

The rejection of claim 12 is similar to that for claims 10-11 as recited above since the stated limitations of the claims are set forth in the references. Claim 12's limitations difference is taught in *Nakayama et al*:

- said processor is further programmed to provide a set transformation tools for a mathematical sub-object that the user can choose from and apply to the mathematical sub-object in a selection box to product the next step in a solution to the problem (column 13, lines 62-67)

RESPONSE TO APPLICANTS' AMENDMENT REMARKS

Claim Rejections - 35 USC § 103

Applicant argues that it would not have been obvious to modify Nakayama et al USPN 5,732,001 as taught by Reboh et al USPN 4,866,634 (Amendment REMARKS page 5, paragraph 1) and that the teaching of expert systems in Reboh is unrelated to providing transformations for a mathematical object (Amendment REMARKS page 5, paragraph 2) as claimed in independent claims 1 and 7. Applicant's arguments have been fully considered, but are not persuasive. Reboh et al column 1, lines 26-28 and column 2, lines 15-44 offers providing useful conclusions in solving problems as the purpose and motivation for modifying Nakayama et al while Reboh et al's Abstract and column 28, lines 8-11 relate to providing transformations for a mathematical object.

Applicant argues that claims dependent on claims 1 and 7 are allowable (Amendment REMARKS page 6, paragraph 2). Applicant's arguments have been fully considered, but are not persuasive. Claims 2-6 and 8-12 stand rejected under 35 USC 103 as recited above and for being dependent on rejected independent claims 1 and 7.

As set forth above with regards to Nakayama et al and Reboh et al, the items listed explicitly and inherently teach each element of the applicants' claimed limitations. Applicants have not set forth any distinction or offered any dispute between the claims of the subject application, Nakayama et al's Calculator with stepwise display of linear equations and Reboh et al's Data-driven, functional expert system shell.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The following prior art made of record is considered pertinent to applicant's disclosure:

- *Brothers et al*; US PAP 20030038784 A1; Selection of mathematical objects from the history screen on a handheld device

- *Patton*; USPN 4852057 A; Algebraic expression manipulation method and implementation for an electronic data processing apparatus

Any inquiry concerning this communication or earlier communications from the Office should be directed to Meltin Bell whose telephone number is 571-272-3680. This Examiner can normally be reached on Mon - Fri 7:30 am - 4:00 pm.

If attempts to reach this Examiner by telephone are unsuccessful, his supervisor, Anthony Knight, can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MB
December 12, 2004

Anthony Knight
Supervisory Patent Examiner
Group 3600